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10/039,808	10/26/2001	Shamouil Shamouilian	AMAT/3462.D1/CPL/COPPER/P	1113

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APPLIED MATERIALS, INC.
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EXAMINER

NICOLAS, WESLEY A

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 12/02/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

10/039,808

Applicant(s)

SHAMOUILIAN ET AL.

Examiner

Wesley A. Nicolas

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-- The MAILING DATE of this communication appears on the cov r sh et with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-20 and 24-28 is/are pending in the application.
- 4a) Of the above claim(s) 24-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- ☐ Interview Summary (PTO-413) Paper No(s). _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

This is in response to the Amendment submitted September 11, 2003. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 14-20 and 24-28 are currently pending in this application, with new claims 24-28 being withdrawn as being drawn to a non-elected invention by original presentation (see ¶ 2 below).

Election/Restriction

1. The cancellation of non-elected claims 1-13 and 21-23 by Applicant has been noted. Applicant may re-file said claims in a divisional application.
2. Newly submitted claims 24-28 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Claims 24-28 are directed to subject matter which is substantially similar to non-elected and cancelled claims 10-13 (*i.e.* method for supplying electricity to a substrate).

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 24-28 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

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Claim Objections

3. The objection to claim 20 as set forth in the previous Office action has been **withdrawn** in view of Applicant's amendment to said claim in the response submitted on September 11, 2003.

Claim Rejections - 35 USC § 102

4. Claims 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Crafts et al. (5,807,469).

The 35 U.S.C. § 102 rejection with respect to claims 14-15 has been **withdrawn** in view of the amendment submitted by Applicant on September 11, 2003. A new rejection of the amended claims is set forth below.

Claim Rejections - 35 USC § 103

5. Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crafts et al. (5,807,469) as applied to claims 14 and 18 above, and further in view of Kholodenko et al. (5,885,469).

The 35 U.S.C. § 103 rejection with respect to claims 16-20 has been **withdrawn** in view of the amendment submitted by Applicant on September 11, 2003. A new rejection of the amended claims is set forth below.

New Rejection - 35 U.S.C. § 103

6. Claims 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crafts et al. (5,807,469), and further in view of Kholodenko et al. (5,885,469).

Crafts et al. teach a method of forming a contact ring, comprising:

- providing a substrate (col. 8 and e.g. Fig. 7, numeral 202 or Fig. 7, numeral 226);
- depositing at least a conductive layer on the substrate (Fig. 5, numeral 202); and
- depositing at least an insulative layer adjacent to the at least a first conductive layer (Fig. 5, numeral 226 and col. 8 "dielectric layer");

Kholodenko et al. teach a substrate holder comprising:

- a first conductive layer which coats all surfaces of the substrate (col. 4, "conductive layer...is used to form the sculpted electrode", and e.g. Fig. 2, numeral 112);
- an insulative layer which coats all surfaces of the substrate (col. 4, e.g. Fig. 2, numerals 113 or 116), and
- a compliant ridge formed on the external surface (Abstract: "flex circuit"), and extending about the periphery (Fig. 2, raised regions 107 and 116) with an additional layer deposited on top of the insulative layer (col. 4 and e.g. Fig 2, numeral 116 on top of numeral 113).

Regarding claim 14, Crafts et al. fail to specifically teach:

- a first conductive layer which coats all surfaces of the substrate;
- an insulative layer which coats all surfaces of the substrate, and

Regarding claim 15, it is rejected because Crafts et al. teach of electrically connecting a contact to at least one of the conductive layers (Fig. 5, numeral 202).

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Regarding claims 16 and 19, Crafts et al. fail to specifically teach of a compliant ridge which is defined in the insulative layer.

Regarding claims 17-18, Crafts et al. fail to specifically teach of a compliant ridge formed on the external surface, and extending about the periphery of the contact.

Regarding claim 20, Crafts et al. fail to specifically teach an additional layer deposited on top of the insulative layer.

Claims 14 and 16-20 are rejected because it would have been obvious and within the ordinary skill in the art at the time the invention was made to have modified Crafts et al. to use the insulative layer on all surfaces of the substrate and the compliant ridge of Kholodenko et al. because Kholodenko et al. teach an insulative layer which coats all surfaces of the substrate (col. 4, e.g. Fig. 2, numerals 113 or 116) and a compliant ridge formed on the external surface (Abstract: "flex circuit"), and extending about the periphery of the contact (Fig. 2, raised regions 107 and 116) which would have protected the underlying contact ring substrate from contamination by the process fluid and increased the substrate contact area with the contact ring minimizing the passage of electrolyte fluid past the compliant ridge, thereby allowing for efficient electrical contact between the contact ring and the substrate to be treated.

Although Kholodenko et al. teach a substrate holder/chuck for processes where the electrode (*i.e.* conductive layer) is not in direct contact with the substrate, one of ordinary skill in the art would have modified the specific contact between the substrate and electrode (*i.e.* conductive layer) to fit the particular needs and end use of the apparatus. For example, since Kholodenko et al. is directed to an electrostatic chuck,

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direct contact of the electrode (*i.e.* conductive layer) with the substrate is not required because all that is needed from the electrode (*i.e.* conductive layer) is the production of an electrostatic field which can be produced through a dielectric layer. However, if the end use was electrolytic plating (*i.e.* Crafts et al. and the instant invention), one of ordinary skill in the art would have routinely exposed the electrode (*i.e.* conductive layer) to enable direct contact with the substrate to provide for efficient power transfer from the electrode to the substrate for electrolytic plating or etching.

REMARKS - Response to Arguments

7. Applicant's arguments with respect to claims 14-20 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claims 14 and 15, Applicant argues that the newly amended claims distinguish over the prior 35 U.S.C. § 102 rejection of Crafts et al. Examiner must agree and said § 102 rejection has been withdrawn in favor of a new rejection which is set forth clearly above. Applicant asserts that Crafts et al. do not teach the application of a conductive layer which coats all surfaces of the substrate or an insulative layer which coats all surfaces of the substrate. Applicant's arguments are convincing and for those reasons, Examiner introduced the secondary reference of Kholodenko et al. to teach the deficiencies of Crafts et al., the rejection being clearly set forth above.

Regarding claims 16-17, Applicant argues that Kholodenko et al. fail to teach a conductive layer which coats all surfaces of the substrate or an insulative layer which coats all surfaces of the substrate, and even if it does, there is no suggestion to

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combine Kholodenko et al. with Crafts et al. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, motivation to combine references is taken from knowledge generally available to one of ordinary skill in the art. In the substrate holder/contact art, the specific contact (or non contact) of the substrate with the holder or electrode is purely dependent on the specific type of processing of the substrate. For example, as set forth above in the claim rejections, although Kholodenko et al. is directed to an electrostatic chuck, one of ordinary skill in the art would have modified such a substrate holder to allow the electrode (*i.e.* conductive layer) to contact the substrate directly. Therefore, the knowledge generally available to one of ordinary skill in the art is sufficient for a combination of Crafts et al. and Kholodenko et al.

Regarding claims 18-20, Applicant argues that Crafts et al. or Kholodenko et al. alone or in combination do not teach Applicant's claimed invention, namely a contact in electrical contact with the conductive layer and extending through the insulative layer to an external surface. In response, Examiner must respectfully disagree. Crafts et al. in Fig. 8 teach of an electrically conductive arm where the conductive layer (Fig. 8,

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numeral 214) extends through the insulative layer (Fig. 8, numerals 230 and 232) in two points. Nowhere in the claim does Applicant specify where the contact is. Therefore, Examiner is using the teaching of Crafts et al. with respect to the contact arm to teach a portion of Applicant's invention.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley Nicolas whose telephone number is (703)305-0082. The examiner can normally be reached on Mon.-Thurs. from 7am to 5pm.

The Supervisory Primary Examiner for this Art Unit is Roy King whose telephone number is (703) 308-1146.

The fax number for this Group is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.



WESLEY A. NICOLAS
PATENT EXAMINER

November 30, 2003